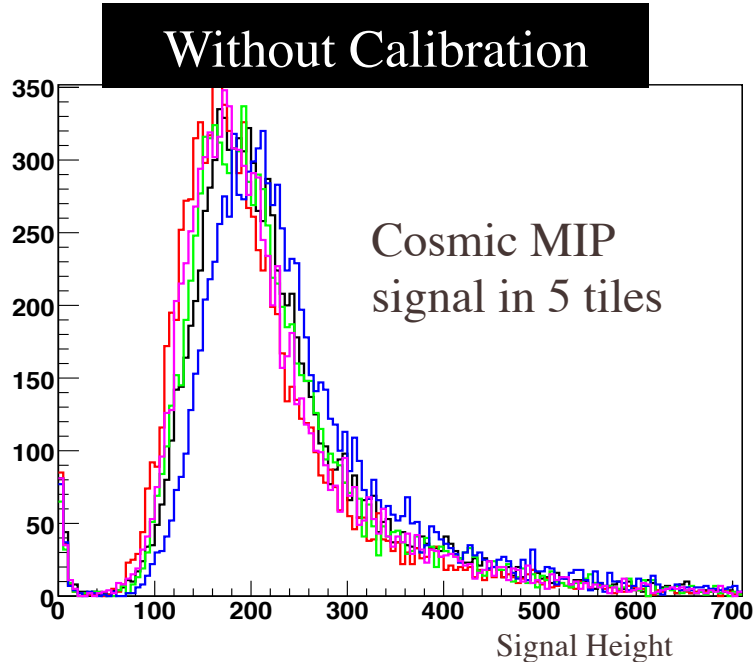


# *HCAL studies*

Abhisek Sen

# *Light output variation*

From cosmic studies in the HCAL lab..

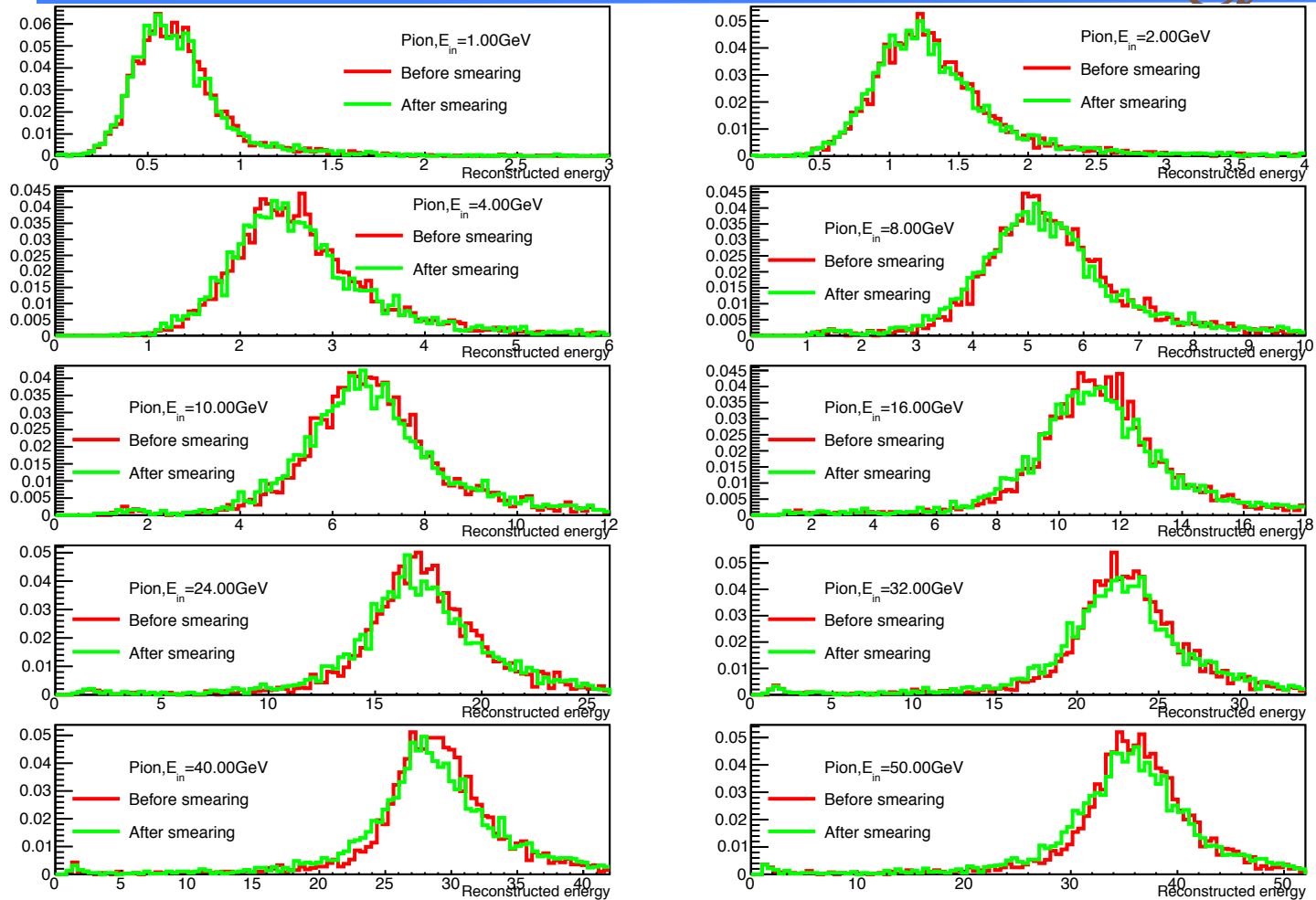


Small variation of the tile response observed. Some of that will be recovered by LED calibration.

Simulate this effect in Geant4?

Smear the tile energy deposit by up-to 20% and see the effect on the energy resolution.

# Reconstructed energy



No significant change in the resolution. However the tails are higher.

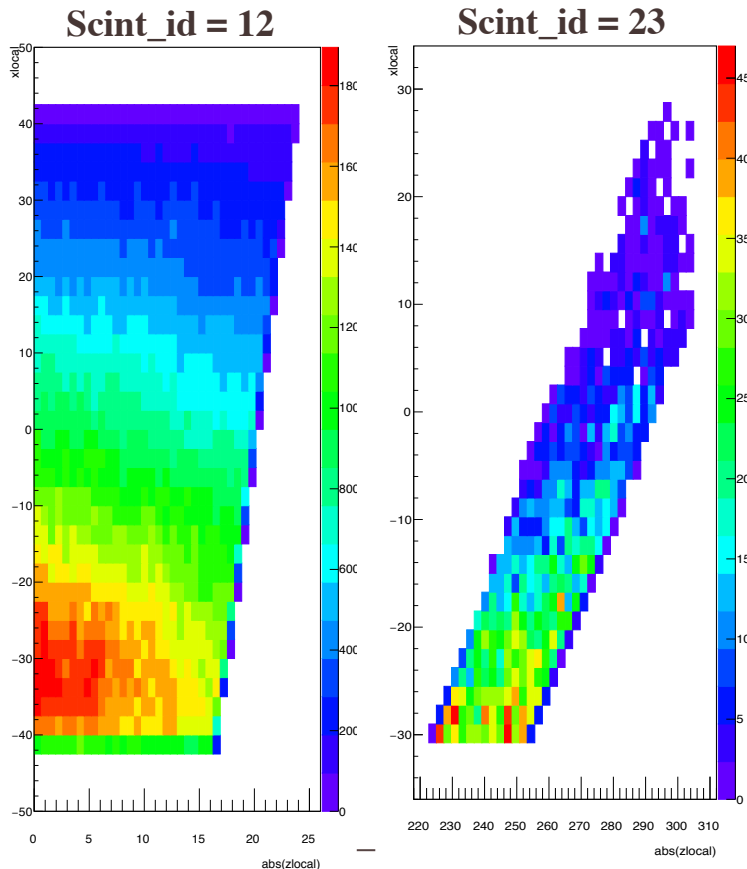
---

# *Local coordinates in Geant4*

# Local coordinates

```
G4TouchableHandle theTouchable = prePoint->GetTouchableHandle();  
G4ThreeVector worldPosition = prePoint->GetPosition();  
G4ThreeVector localPosition = theTouchable->GetHistory()  
->GetTopTransform().TransformPoint( worldPosition );
```

Inside the  
stepping action



This would allow applying the 2D LED response map in the simulation.

